

Case Report

Arteriocolic fistulae due to a stab wound: A rare cause of lethal lower gastrointestinal bleeding

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Abstract

The authors describe the first reported case of lethal lower gastrointestinal bleeding due to an ilioocolic fistulae following a single stab wound. They also discuss the pathophysiology of the enterovascular fistulae, as well as a review of the literature and assess forensic characteristics. This unusual case underlines the importance of being aware of the victim's history in arteriocolic fistulae due to a stab wound.

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1. Introduction

Colon wounds are frequent lesions caused by violence, particularly a gunshot or stabbing. Associated intra-abdominal injuries occurred in the small bowel, liver, stomach, and mesentery.¹ In most cases, complications include wound infection, septicemia, and enterocutaneous fistulae.² Although enterovascular fistulae have been reported in the literature after colic or vascular surgery,³ pericolic abscesses⁴ and particularly in advanced gynecologic malignancy,^{5,6} this type of dramatic complication has rarely been described related to stab wounds.⁷

We report a case of rapidly lethal ilioocolic fistulae due to a single iliac stab wound, as well as review the literature and present the various forensic characteristics.

2. Case report

A 32-year-old man was involved in a domestic fight, which resulted in the patient sustaining multiple injuries, particularly a stab wound in the left iliac fossa. The emer-

gency mobile unit was contacted 1 h after the event, and the patient found was found in a life-threatening condition, in a armchair sitting in a pool of blood. The patient finally died, due lethal bleeding, although he was given intensive resuscitation. An autopsy was ordered by the court, and performed two days later.

External examination revealed multiple lesions:

- recent – red and blue – ecchymoses and bruises of the right ocular region, the frontal region of the head, the left temporal area, the sternum, the left iliac fossa, as well as both elbows;
- a “defense” wound punctiform lesion (3 mm) of the right middle finger;
- superficial linear wounds of the right periocular region, the nose, the right cheek, and the chin;
- a right conjunctiva haemorrhage;
- pale lips;
- a fresh profuse rectal haemorrhage.

External examination revealed a recent left iliac fossa stab wound of 15 mm length, with well-limited edges (Fig. 1b). This wound was located at 106 cm from the base of the heel, 8 cm left to the umbilicus, 7 cm under the umbilical line. A little orifice, with a slight amount of blood

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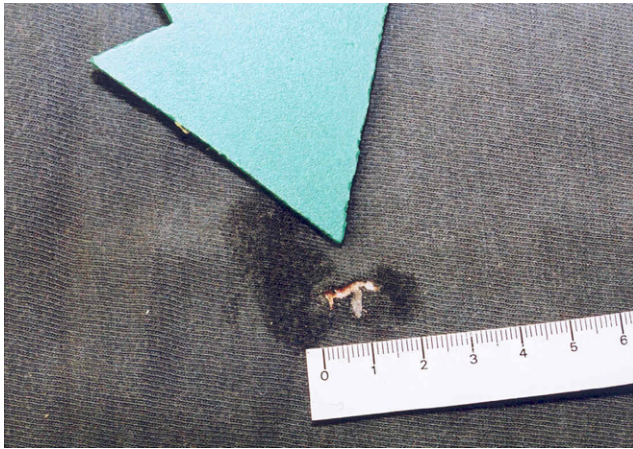


Fig. 1a. Single T-shirt stab orifice.



Fig. 1b. Corresponding cutaneous left iliac fossa stab unique wound, with no trace of severe bleeding.

surrounding, was visible on the anterior and left lower part of the t-shirt (Figs. 1a and 1b).

At autopsy, there were no cerebral abnormalities. Neck dissection showed no strangulation lesion. Lungs were eedematous and congested (weight 700 g and 845 g).

Abdominal and pelvic dissection was cramped by the presence of multiple adherence. Nevertheless, it confirmed a left iliac fossa penetrating wound, associated with a 10 × 15 cm-clotted haematoma, located laterally to the psoas muscle (Fig. 2). Careful dissection of this region revealed two linear small bowel wounds (2 and 10 mm long), a descending wound which transfixied the intestine, and a primitive iliac left artery wound of 5 mm long adjacent to the colon (Figs. 3–5), located 7 cm deep. Rectal and colon dissection confirmed a large quantity of blood (+1 l). No other intestine lesion was observed; appendix was not present.

Macroscopic examination of the brain, heart, lungs, liver, spleen, and kidneys revealed no pathological abnormality. Histological examination of the abdominal skin wound, colon, and iliac wound showed a recent haemorrhagic lesion, with no inflammation, which suggested wounds which occurred a maximum of twenty minutes before death.

Extensive toxicological screening revealed a massive alcohol intoxication (blood 2.43 g/l, urine 2.64 g/l, gastric content 2.84 g/l, bile 2.00 g/l) and cannabis in blood (THC 0.2 ng/ml, 11 OH-THC 1.2 ng/ml, THC-COOH 8.1 ng/ml, GC-MS).

Death was finally attributed to an extensive haemorrhage due to an ilioecolic fistulae, which was related to a penetrating abdominal stab wound. Death was estimated at less than 20 min after the victim was stabbed. It was considered that the patient's death was facilitated by alcohol intoxication.

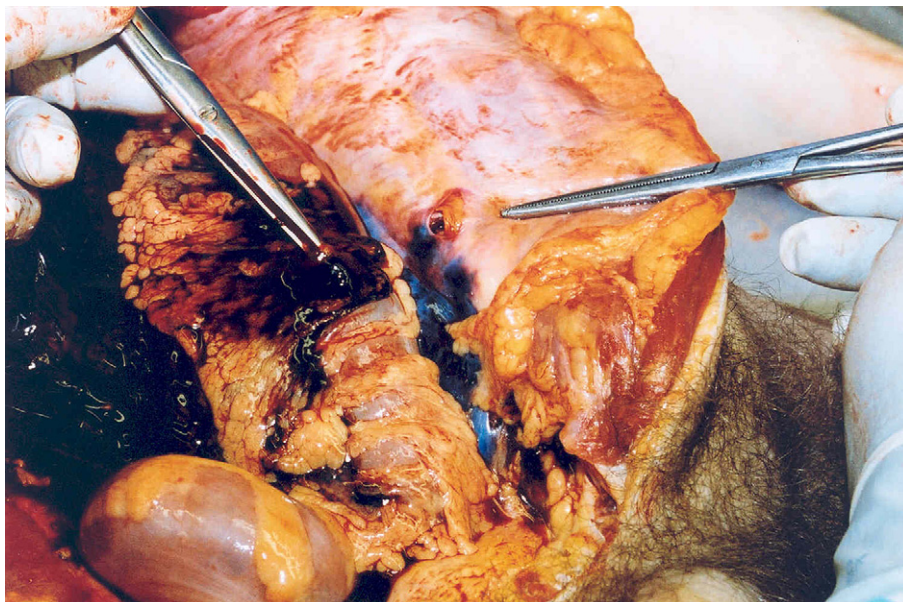


Fig. 2. Internal vision of the stab wound. An adjacent colon haemorrhage wound, a subcutaneous ecchymotic infiltration and a medial muscular haematoma are also visible.

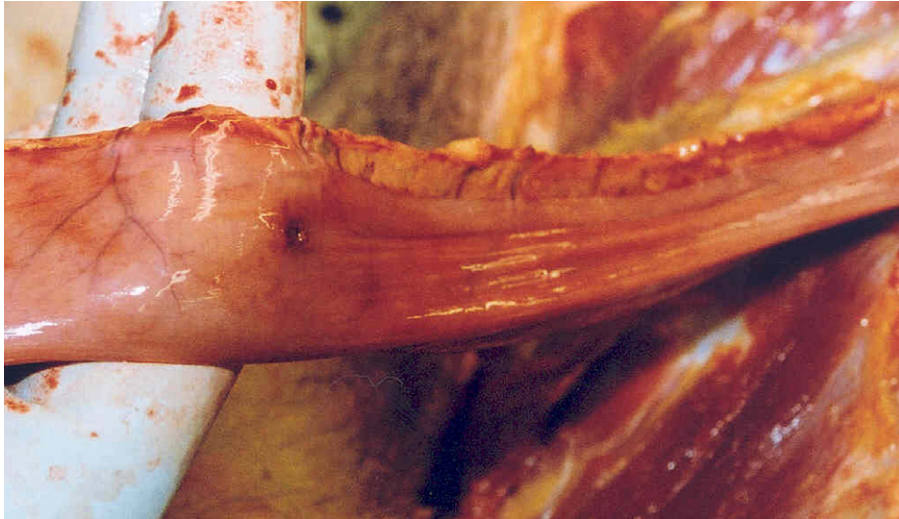


Fig. 3. Small bowel punctiform wound.

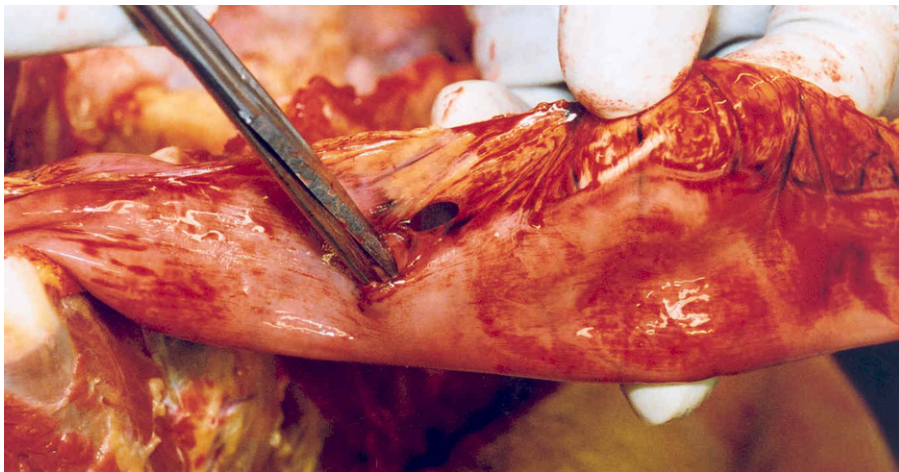


Fig. 4. Lateral colon wound.

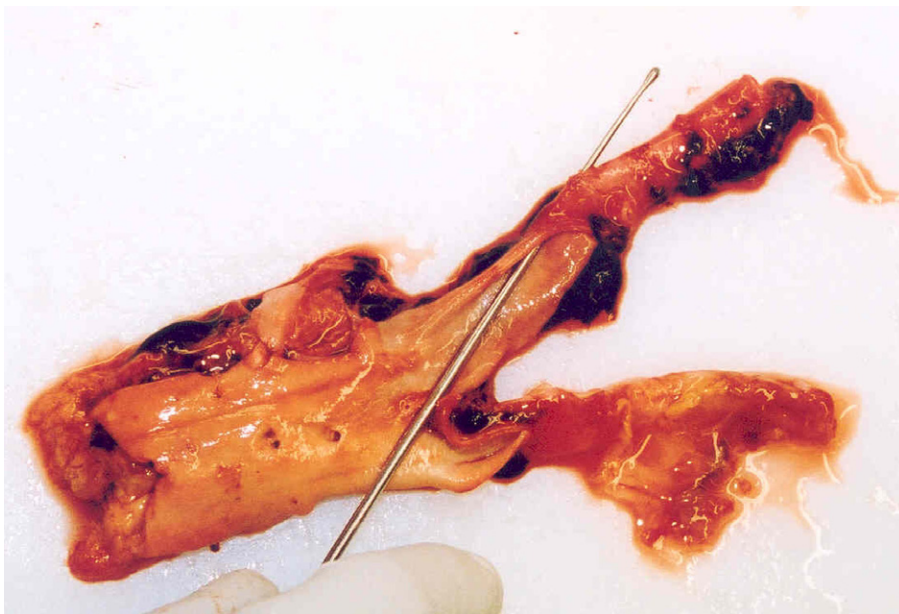


Fig. 5. Primitive left iliac artery wound, shown by a probe.

3. Discussion

As regard as the review of the literature, Ovid Medline search using “exp iliac artery” and “exp colon” and “exp fistulae” retrieved only 9 articles. Only three articles described “real” iliocolic fistulae (one case of advanced gynecological malignancy related iliac arteriocolic fistulae, and two aortoiliac aneurysms that was adherent to the sigmoid colon). A Pubmed search with “iliac artery + fistulae + colon” retrieved 20 articles, which confirmed that main aetiologies of iliocolic fistulae or arterioenteric fistulae are pelvic malignancy and/or pelvic irradiation, and postoperative complications, particularly after aortic surgery. Extensive review of the literature only showed a similar single case report of post trauma enterovascular fistulae associated with a stab wound, which did not involve colon or iliac artery (e.g. small bowel and vena cava).

Aortocolic, iliocolic or enterovascular fistulae are rarely described in the literature,^{1–15} but can cause life-threatening haemorrhage. Although most arterioenteric fistulae involve the duodenum, they can occur at any section along the gastrointestinal tract, whereas those in the lower tract may present with less classic symptoms than arterioduodenal fistulae.

Iliocolic fistulae is a rare source of potentially massive lower gastrointestinal haemorrhage^{6,11,13} particularly in women during advanced gynecological malignancy,⁵ or in patients with pericolic abscess⁴ or tumour,¹² who can develop gastrointestinal haemorrhage with or without prior pelvic irradiation. Enterovascular fistulae can also result from aneurysmal vascular adherence to the colon – particularly the aorta, iliac artery and sigmoid colon, or from a postoperative aortic complication.^{1–3,9,13}

In these cases, the epithelium is altered, interstitial oedema occurs and vascular changes lead to ischemia, increasing the epithelial injury. Subsequently, there is progressive change in the vascular and connective tissue beds, which develops necrosis, fibrosis, strictures, and impaired intestinal motility. The coexistence of these abnormalities, as well as other adjacent pathological processes, including vascular aneurysms or tumours, may provoke adherence and a subsequent fistulae. Therefore, there is a flow from the higher to the lower pressurized cavity, i.e. from vessel to intestine.

Fistulae following stab wounds do not correspond to this type of pathophysiology. In our case, autopsy findings suggested that adherence was principally related to a clotted haematoma that fixed iliac artery to the colon, which were both transfixed and penetrated by stabbing.

Initial adherence was more difficult to explain, because of the blood flow pressure of the iliac artery lesion, which theoretically should have pulled back the proximal colon. Postoperative adhesions, which were found during autopsy in the abdominal cavity, and related to a past appendectomy, is a probable explanation. In fact, prior existence of adhesions between colon and iliac artery, unfortunately

located at the stab wound site, could explain the evolution of our unusual case.

4. Conclusion

Iliocolic fistulae could be a dramatic consequence of a stab wound, by causing major lower intestinal haemorrhage. Our case emphasizes the fact that a single abdominal wound, with no external severe bleeding, must be considered as possibly immediately lethal. This unusual case underlines the importance of knowing the victim's history in arteriocolic fistulae due to stab wound.

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